Bruhath Bengaluru Mahanagara Palike

QUALITY ASSURANCE/QUALITY CONTROL REPORT

Office of the Chief Engineer (Quality Assurance/Control) Annexure-05,
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QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

CE/QA/PR/ 70/2022-23, DATE: 22/12/22

Name of Work	:	Development of roads and drains at Kasagattapura, Vaderahalli, Shivakote, Kachonhalli gram panchayathi Limits and surrounding areas of Yelahanka Assembly constituency under Amrutha Nagarothana Grants. Package – 05 (Estimated cost – 1600.00 Lakhs)
Job Code	:	003-23-000006
Bill No.	:	**1st & Part (RA Bill)**
Type of Test Performed	:	Rebound Hammer test as per IS13311-(2)-1992.
Materials on which Tests Was Performed	:	1.RCC Drain Wall (M20) 2.Pre cast cover slab (M20) 3.CC Road (M30)
Officers present during inspection	:	1.Sri.R. Naveen Project division Yelahanka zone 2. Sri C.Shridhar. AEE-Quality Assurance
Project Management Consultants	:	**M/s Rudraprasad Consultants.**
Observations	:	Rebound hammer test was conducted in presence of AEE (Project division Yelahanka zone) along with Project Management Consultants representative. The Rebound Hammer Test was conducted randomly on CC Roads, RCC Drain wall and Precast cover slabs. The work was inspected from Quality Assurance Division on 29.10.2022 when Concrete Road work was under progress at 2nd cross Kamath layout (KVN complex opposite road). Concrete cubes were casted and tests were conducted after 7 days and 28days. Test reports submitted by PMC is here by furnished. The readings of Rebound Hammer Test are tabulated and analysis of test results done by PMC is here by furnished. The location wise test results are reproduced in the tables shown below.
Test Locations	:	1. Location 1: Muneshwara layout main road (Infront of Dharm shree nilya house) 2. Location 2: Jai Maruthi layout main road (in front of lake) 3. Location 3: Sri Balaji electronics road (in front of Supreme electrical products factory)

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

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Table-01: Rebound Hammer Test Results for Location-1

	Member	Position/Elevation (cm)	Rebound Hammer Number	Average reading	Compressive Strength (N/mm2) for 28 days	Impact Direction
Sample Tested Location at Muneshwara layout main road (Infront of Dharm shree nilya house)						
1	RCC Drain wall	LHS	26	27	20	Horizontal
2			28			Horizontal
3			28			Horizontal
4			28			Horizontal
5			26			Horizontal
6			26			Horizontal
1	Precast cover slab	LHS	30	31	32	Vertical down
2			30			Vertical down
3			32			Vertical down
4			30			Vertical down
5			30			Vertical down
6			32			Vertical down

Table-02: Rebound Hammer Test Results for Location-2

Sl. No.	Member	Position/Elevation (cm)	Rebound Hammer Number	Average reading	Compressive Strength (N/mm2) for 28 days	Impact Direction
Sample Tested Location at Jai Maruthi layout main road (in front of lake)						
1	CC Road	LHS	34	34	36	Vertical down
2			36			Vertical down
3			34			Vertical down
4			34			Vertical down
5			32			Vertical down
6			34			Vertical down

Table-03: Rebound Hammer Test Results for Location-3

Sl. No.	Member	Position/Elevation (cm)	Rebound Hammer Number	Average reading	Compressive Strength (N/mm2) for 28 days	Impact Direction
Sample Tested Location at Sri Balaji electronics road (in front of Supreme electrical products factory)						
1	CC Road	LHS	32	33	34	Vertical down
2			32			Vertical down
3			34			Vertical down
4			32			Vertical down
5			34			Vertical down
6			34			Vertical down
1	RCC Drain wall	LHS	28	27	20	Horizontal
2			28			Horizontal
3			28			Horizontal
4			26			Horizontal
5			28			Horizontal
6			26			Horizontal
1	Precast cover slab	LHS	30	31	32	Vertical down
2			32			Vertical down
3			32			Vertical down
4			30			Vertical down
5			30			Vertical down
6			30			Vertical down

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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TEST REPORT OF CEMENT CONCRETE CUBES

Location: 2nd cross Kamath layout (KVN complex opposite road)
Sample grade/Age : M30 / 7Days Compressive Strength

Sl. No.	Identification Mark	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm²)	Average Compressive Strength (N/mm²)
1	CC Road	29/10/22	05/11/22	150.64x150.05x150.20	22603	8.220	575.8	25.5	25.5
2	CC Road	29/10/22	05/11/22	150.40x150.43x151.14	22624	8.787	600.6	26.5	
3	CC Road	29/10/22	05/11/22	149.29x150.97x150.50	22539	9.067	550.9	24.4	

Location: 2nd cross Kamath layout (KVN complex opposite road)
Sample grade/Age : M30/ 28Days Compressive Strength

Sl. No.	Identification Mark	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm²)	Average Compressive Strength (N/mm²)
1	CC Road	29/10/22	26/11/22	151.05x151.03x151.43	22813	8.410	943.2	41.3	41.3
2	CC Road	29/10/22	26/11/22	151.41x151.48x151.08	22935	8.490	1119.5	48.8	
3	CC Road	29/10/22	26/11/22	151.11x150.77x150.76	22782	7.932	767.6	33.7	

ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
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The file containing 1st & part bill has been submitted for the above work to QA department on 20-12-2022 ing for spot inspection. Engineers of QA/QC division have visited the work spot on 21.12.2022.

During the inspection, it was observed that the items found in the bill, have been executed by the contractor. PMC team was instructed to assess the strength of concrete used for RCC Drain wall (M20), Precast cover slab (M20) and CC Road (M30) by conducting NDT using rebound hammer test method.

From the test results furnished by PMC consultants, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Further, QA/QC directs the PMC and Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

This work was inspected on 29.10.2022 as per the request of engineer in charge of work when Concrete Road work was under progress at 2nd cross Kamath layout (KVN complex opposite road). Further work progress / request for inspection was not intimated to QA division apart from the above mentioned dates & now presently the bill submitted for the work. Therefore randomly NDT (Rebound Hammer Tests) were conducted as explained in this report.

Engineer in charge of work shall ensure that Observations raised during inspection from QA division shall be complied (vide PR No QA/QC/214/22-23 dated 15-11-2022) certified by competent authority of respective zone and necessary action to be taken accordingly & also to adopt observations/instructions for the work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note:-

This report by QA/QC is pertaining to the work carried out in 1st & part bill only. Therefore, further QA/QC reports shall be obtained for the items of work carried out in future Running Account bill / Final bill.

Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

Engineer in charge of work shall obtain requisite approval and Implement traffic management plan prior to commencement of work.

Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

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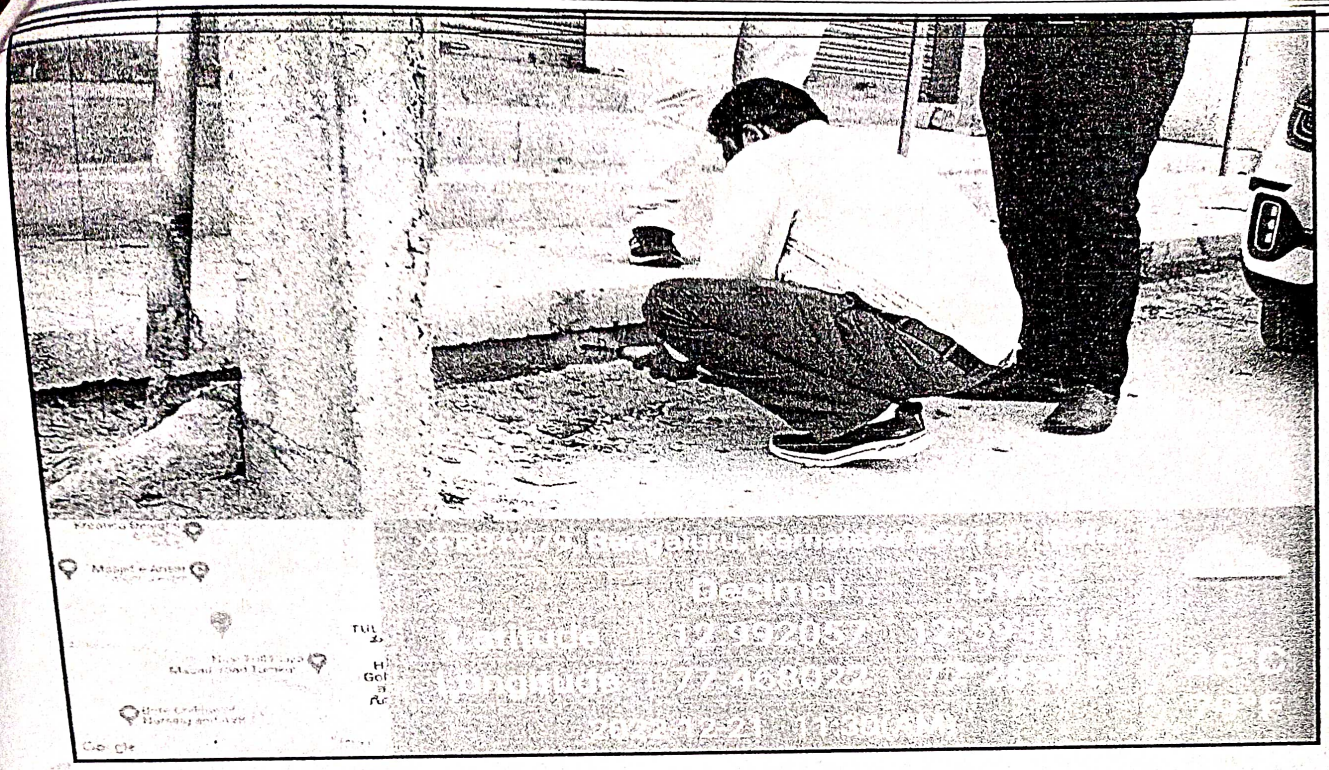
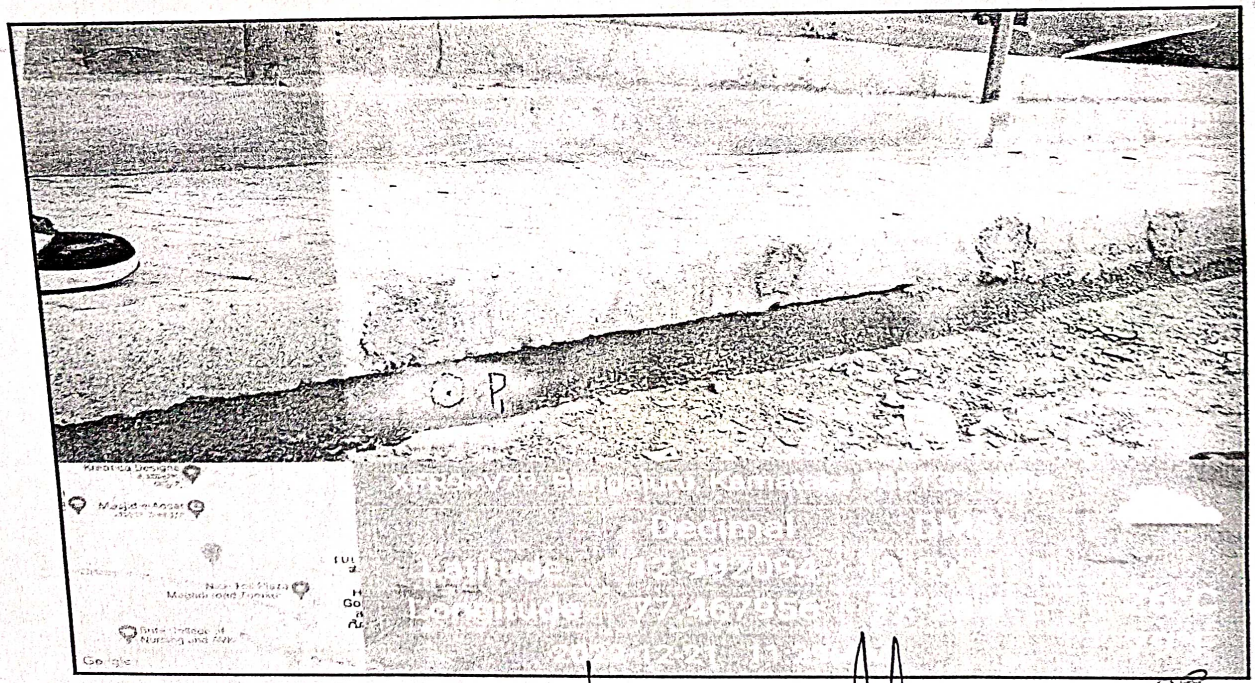
Location 1: Muneshwara layout main road (Infront of Dharm shree nilya house)





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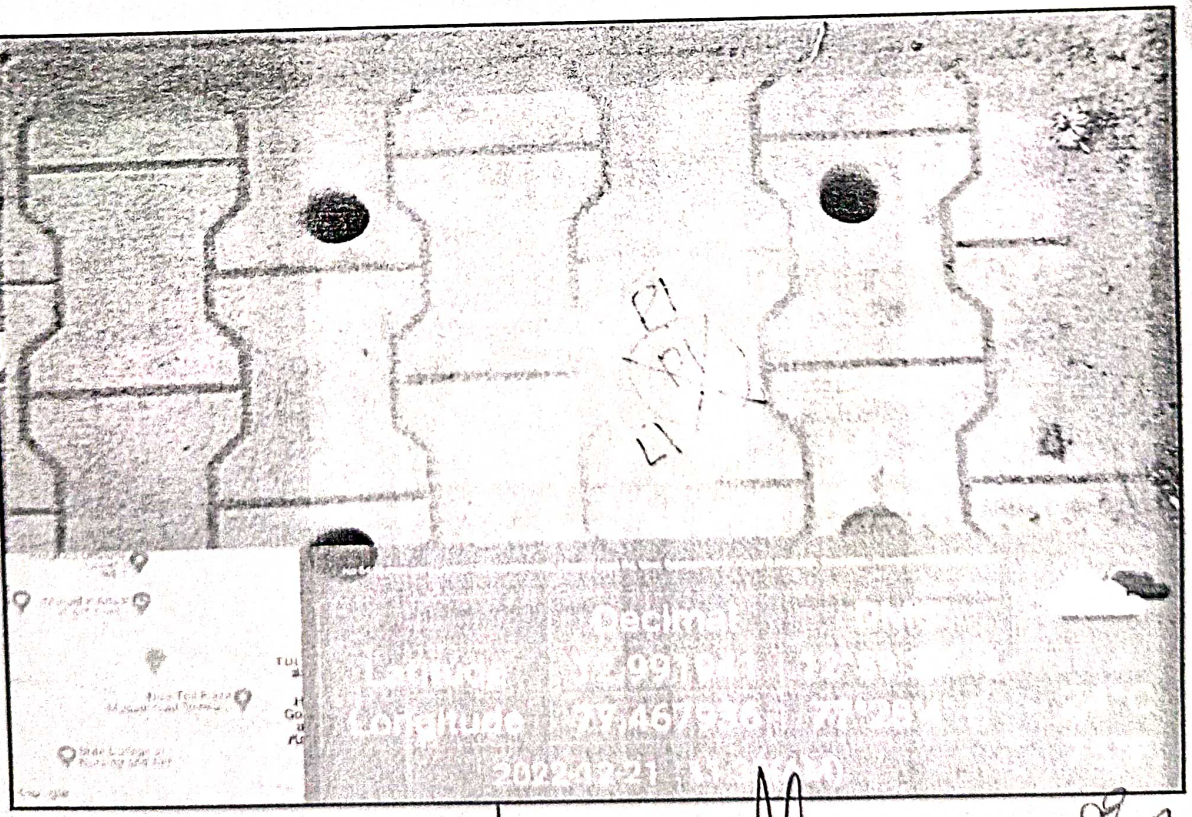
Location 1: Muneshwara layout main road (Infront of Dharm shree nilya house)



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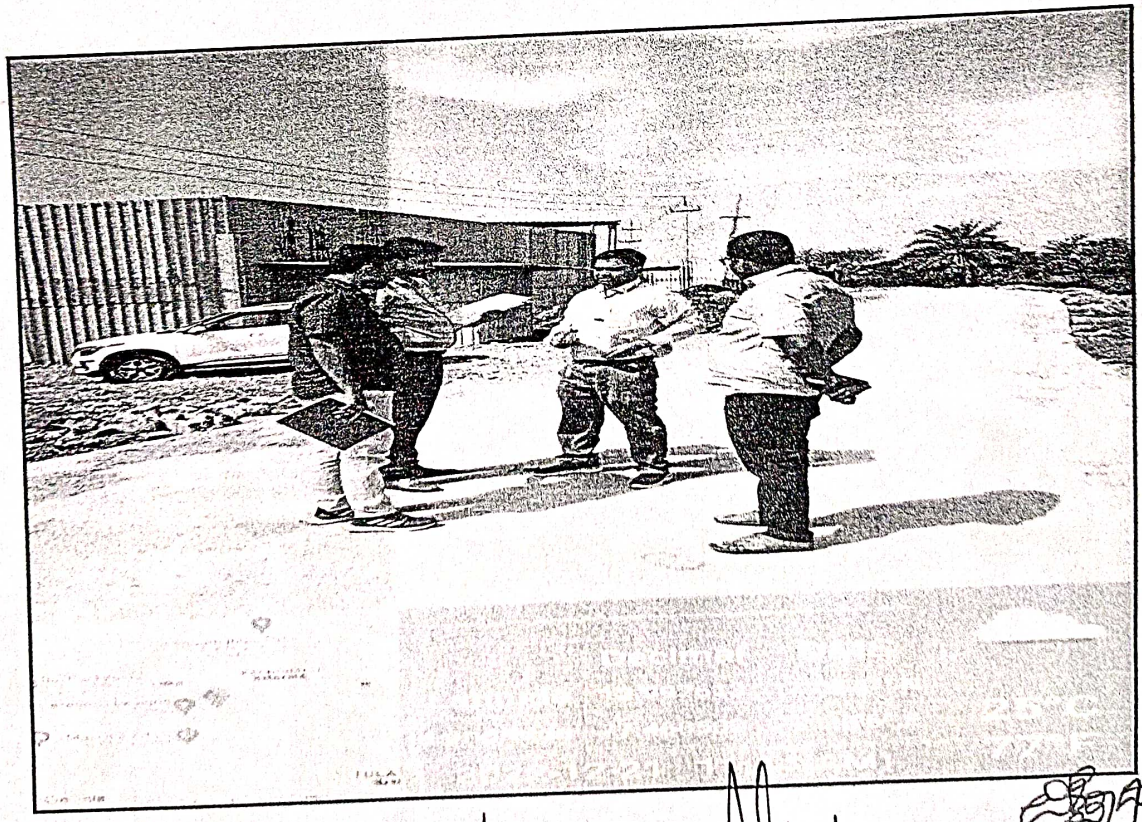
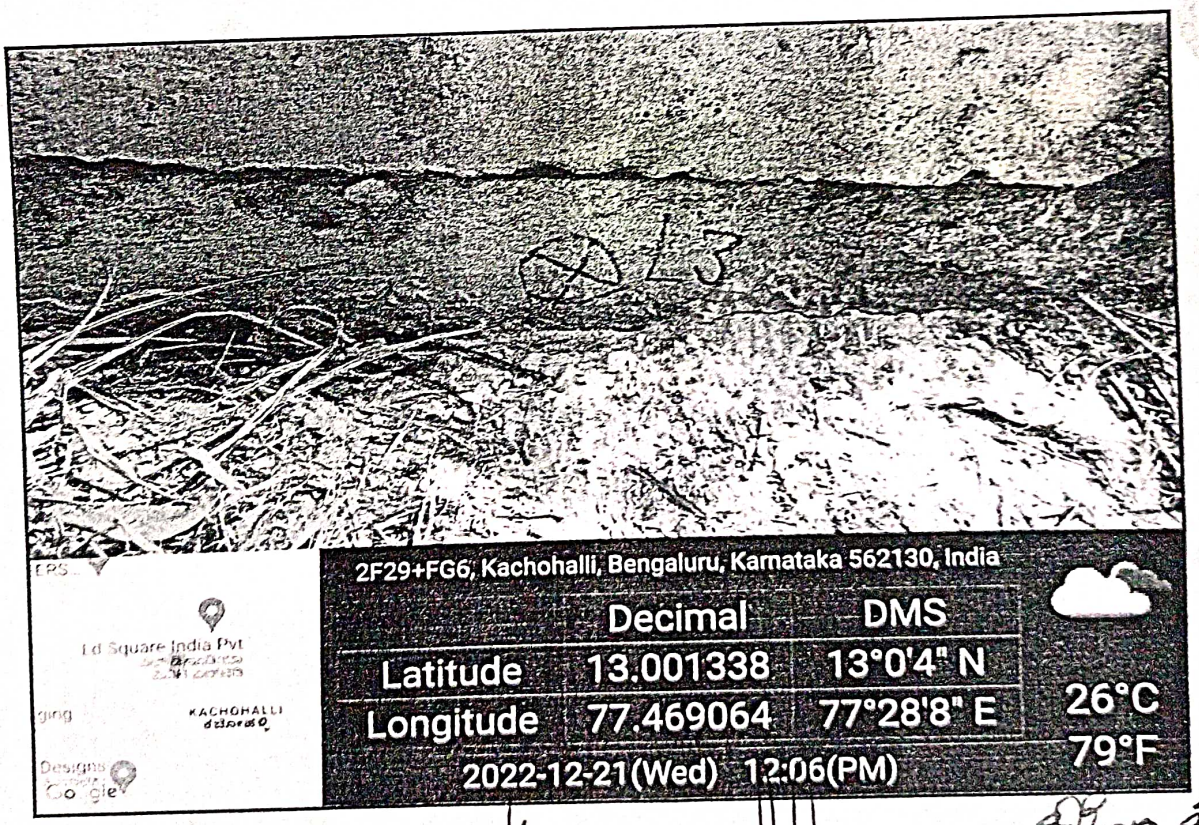
Location 2: Jai Maruthi layout main road (in front of lake)



Development works carried out in Kasaghatapura, Vadeyarahalli, Shivakote, Kachenhalli grant, Panchayath limits and surrounding areas of Yelahanka Assembly constituency under Amruth Nagarothana Grants. Bengaluru Mahanagara Palike

Location 3: Sri Balaji electronics road (in front of Supreme electrical products factory)



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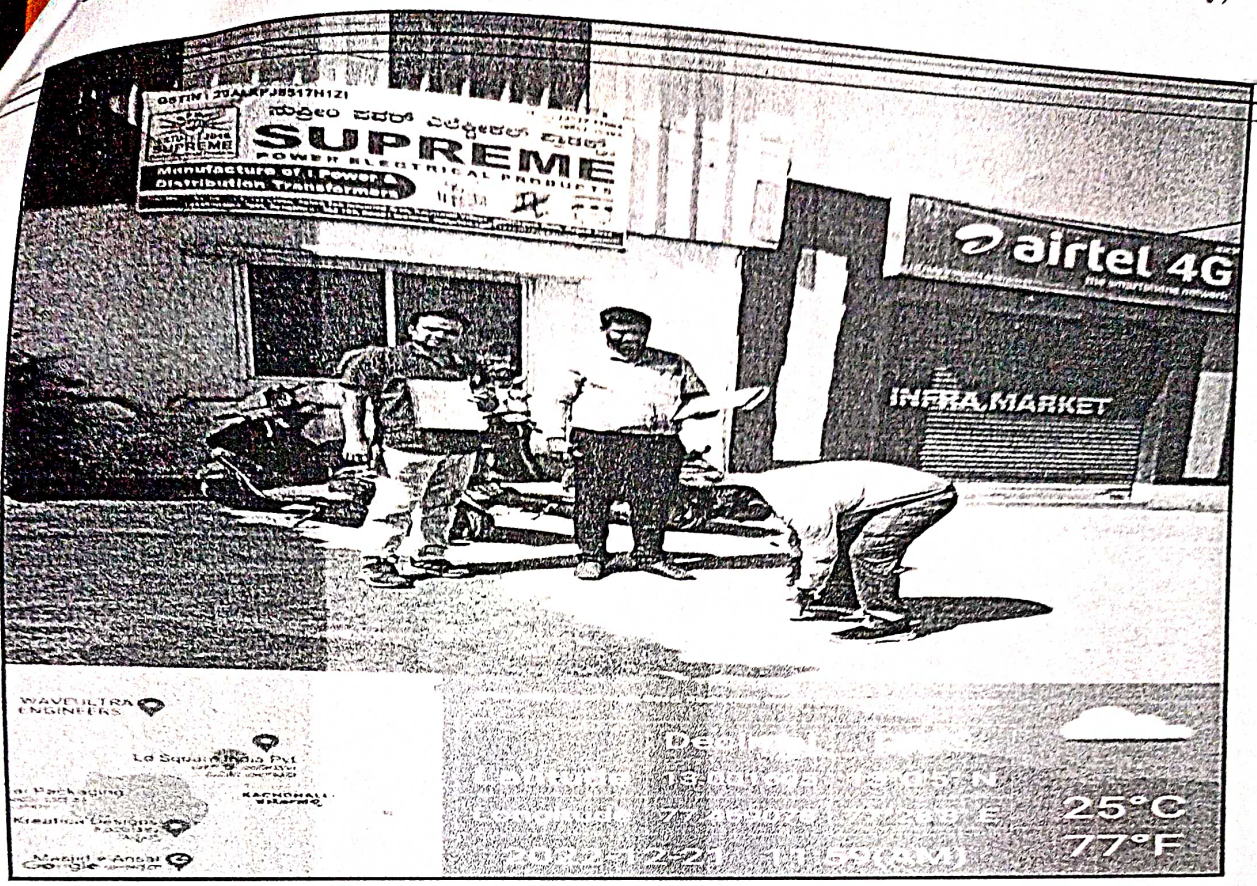
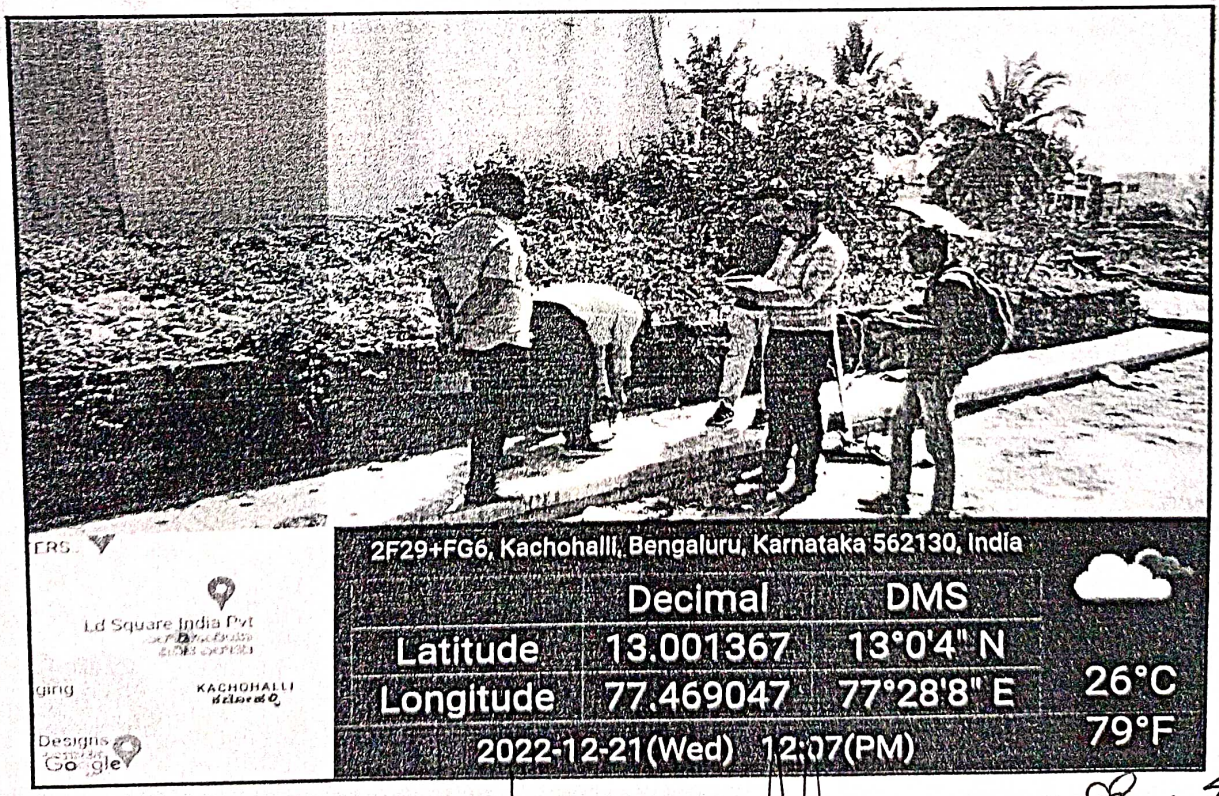
Location 3: Sri Balaji electronics road (in front of Supreme electrical products factory)





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